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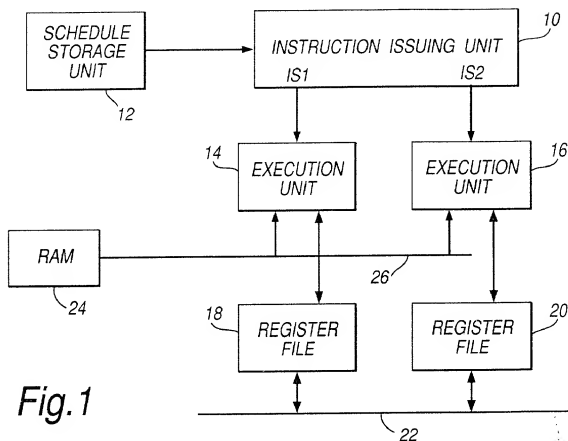


Fig. 1

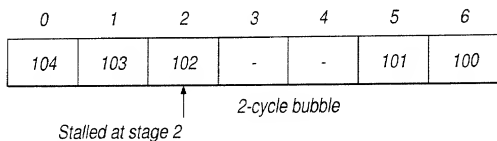


Fig. 2

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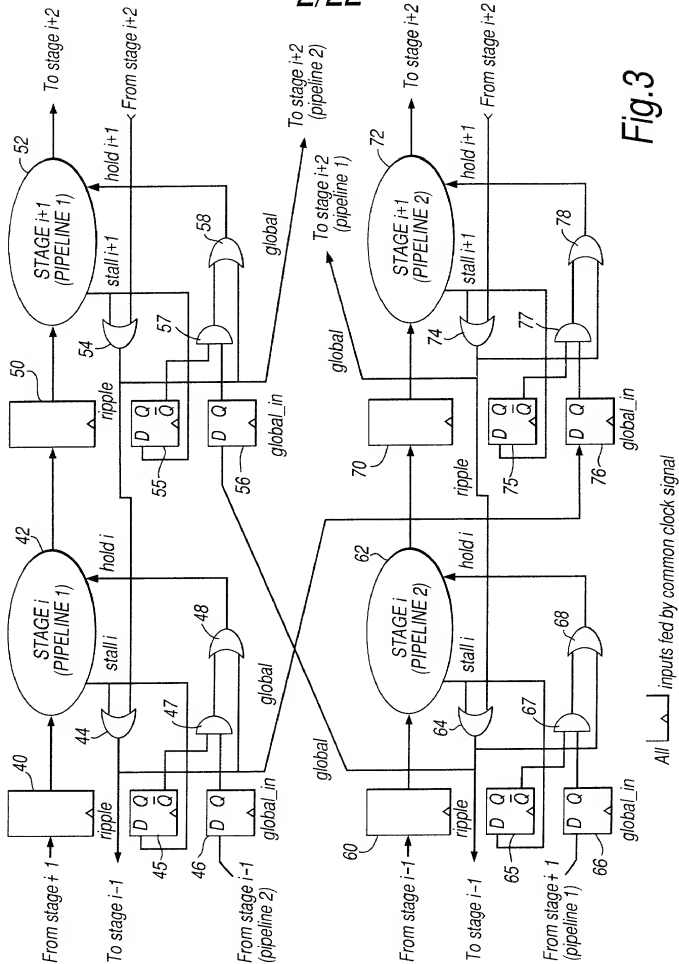


Fig.3

All inputs fed by common clock signal

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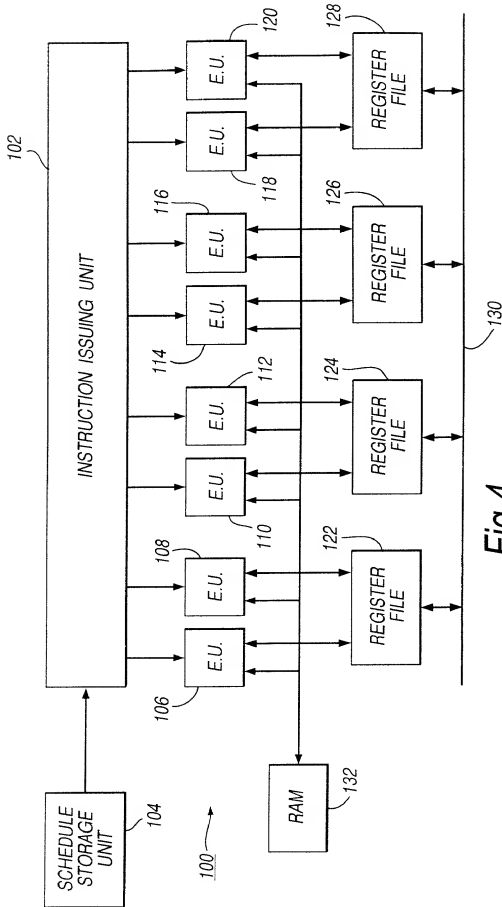


Fig.4

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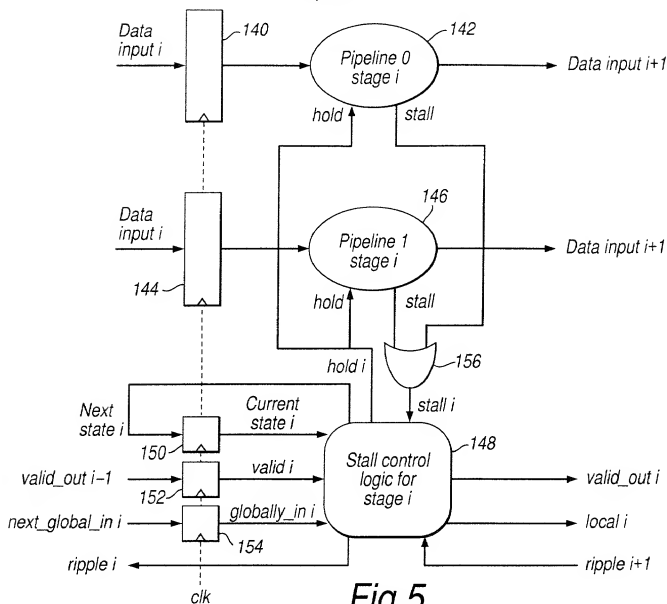


Fig.5

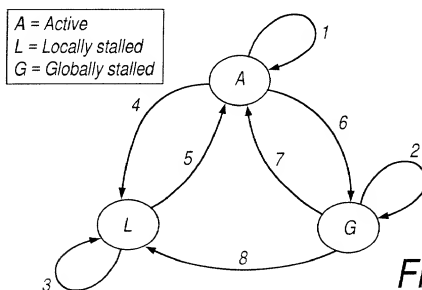


Fig.6

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T=1

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.7

T=2

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 1	106	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1
Cluster 2	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 3	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1

Fig.8

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T=3

	0	1	2	3	4	5	6	
<i>Cluster 0</i>	107	106	105	104	103	-	102	<i>pipe 0</i>
	107	106	105	104	103	-	102	<i>pipe 1</i>
<i>Cluster 1</i>	107	106	105	104	103	-	102	<i>pipe 0</i>
	107	106	105	104	103	-	102	<i>pipe 1</i>
<i>Cluster 2</i>	107	106	105	104	103	-	102	<i>pipe 0</i>
	107	106	105	104	103	-	102	<i>pipe 1</i>
<i>Cluster 3</i>	107	106	105	104	103	-	102	<i>pipe 0</i>
	107	106	105	104	103	-	102	<i>pipe 1</i>

Fig.9

T=4

	0	1	2	3	4	5	6	
<i>Cluster 0</i>	108	107	106	105	104	103	-	<i>pipe 0</i>
	108	107	106	105	104	103	-	<i>pipe 1</i>
<i>Cluster 1</i>	108	107	106	105	104	103	-	<i>pipe 0</i>
	108	107	106	105	104	103	-	<i>pipe 1</i>
<i>Cluster 2</i>	108	107	106	105	104	103	-	<i>pipe 0</i>
	108	107	106	105	104	103	-	<i>pipe 1</i>
<i>Cluster 3</i>	108	107	106	105	104	103	-	<i>pipe 0</i>
	108	107	106	105	104	103	-	<i>pipe 1</i>

Fig.10

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T=1

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.11

T=2

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 1	106	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1
Cluster 2	106	105	-	104	103	102	101	pipe 0
	106	105	-	104	103	102	101	pipe 1
Cluster 3	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1

Fig.12

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$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1

Fig.13

$T=4$

	0	1	2	3	4	5	6	
Cluster 0	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 1	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 2	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 3	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1

Fig.14

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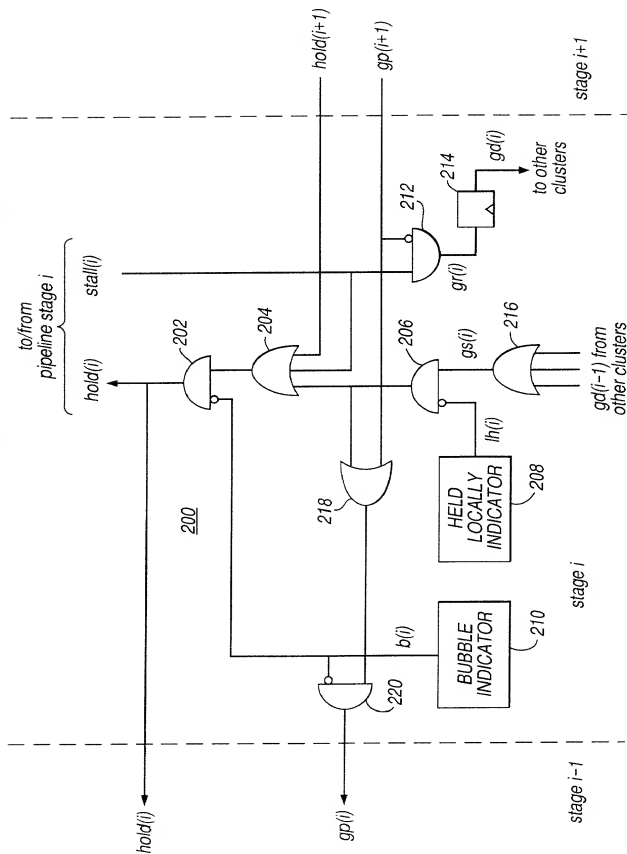


Fig.15

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$T=1$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.16

$T=2$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 1	106	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1
Cluster 2	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 3	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1

Fig.17

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$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1

Fig.18

$T=4$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 1	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 2	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 3	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1

Fig.19

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$T=5$

	0	1	2	3	4	5	6	
Cluster 0	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 1	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 2	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 3	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1

Fig.20

$T=1$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.21

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$T=2$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 1	108	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1
Cluster 2	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 3	108	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1

Fig.22

$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1

Fig.23

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$T=4$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 1	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 2	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 3	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1

Fig.24

$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1

Fig.25

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$T=4$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 1	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 2	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 3	106	105	104	103	-	-	-	pipe 0
	106	105	104	103	-	-	-	pipe 1

Fig.26

$T=1$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.27

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T=2

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	-	101	pipe 0
	106	105	104	103	102	-	101	pipe 1
Cluster 1	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 2	106	105	104	-	103	102	101	pipe 0
	106	105	104	-	103	102	101	pipe 1
Cluster 3	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1

Fig.28

T=6

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	-	-	pipe 0
	106	105	104	103	102	-	-	pipe 1
Cluster 1	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 2	106	105	104	-	103	102	-	pipe 0
	106	105	104	-	103	102	-	pipe 1
Cluster 3	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1

Fig.29

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$T=7$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 1	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 2	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 3	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1

Fig.30

$T=6$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	-	-	pipe 0
	106	105	104	103	102	-	-	pipe 1
Cluster 1	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 2	106	105	104	-	103	102	-	pipe 0
	106	105	104	-	103	102	-	pipe 1
Cluster 3	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1

Fig.31

Fig.32

$T=6$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	-	-	pipe 0
	106	105	104	103	102	-	-	pipe 1
Cluster 1	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 2	106	105	104	-	103	102	-	pipe 0
	106	105	104	-	103	102	-	pipe 1
Cluster 3	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1

Fig.33

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$T=7$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 1	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1
Cluster 2	106	105	104	-	103	102	-	pipe 0
	106	105	104	-	103	102	-	pipe 1
Cluster 3	107	106	105	104	103	102	-	pipe 0
	107	106	105	104	103	102	-	pipe 1

Fig.34

$T=1$

	0	1	2	3	4	5	6	
Cluster 0	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 1	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 2	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1
Cluster 3	106	105	104	103	102	101	100	pipe 0
	106	105	104	103	102	101	100	pipe 1

Fig.35

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$T=2$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 1	106	105	104	103	-	102	101	pipe 0
	106	105	104	103	-	102	101	pipe 1
Cluster 2	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1
Cluster 3	107	106	105	104	103	102	101	pipe 0
	107	106	105	104	103	102	101	pipe 1

Fig.36

$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1

Fig.37

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$T=4$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 1	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 2	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 3	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1

Fig.38

$T=3$

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 1	106	105	104	103	-	-	102	pipe 0
	106	105	104	103	-	-	102	pipe 1
Cluster 2	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1
Cluster 3	107	106	105	104	103	-	102	pipe 0
	107	106	105	104	103	-	102	pipe 1

Fig.39

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T=4

	0	1	2	3	4	5	6	
Cluster 0	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 1	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 2	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1
Cluster 3	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1

Fig.40

T=5

	0	1	2	3	4	5	6	
Cluster 0	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 1	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 2	108	107	106	105	104	103	-	pipe 0
	108	107	106	105	104	103	-	pipe 1
Cluster 3	107	106	105	104	103	-	-	pipe 0
	107	106	105	104	103	-	-	pipe 1

Fig.41